

Support to Operation Desert Thunder

In January, COMUSNAVCENT asked CNA to support planning for Operation Desert Thunder, the potential air strikes against Iraq. In response, CNA positioned analysts at several key nodes: on board USS *Independence* and USS *George Washington* to support the battlegroup staffs and airwings stationed in the Persian Gulf; as part of the Navy augmentation that supported the air campaign planning from JTF-SWA in Saudi Arabia; and, together with a regional expert assigned as the field representative to NAVCENT, to support the planning in Bahrain. A dedicated group of research and intelligence analysts supported the in-theater team from CNA-Washington.

The resolution negotiated by UN Secretary General Kofi Annan in February served to ease tensions for the time being. To help NAVCENT remain ready to respond to future crises with Iraq, COMUSNAVCENT asked CNA to conduct a quicklook analysis of Desert Thunder. The objective of our analysis was twofold: to capture NAVCENT's preparations for the operation and to identify shortcomings that it might resolve before the next crisis arises. We addressed several topics: strike planning, theater air and missile defense, mine warfare, command and control, and coalition issues, to name just a few. NAVCENT drew from our analysis as it prepared for the after-action review.

Continuing TLAM analysis

Our support to NAVCENT for Operation Desert Thunder is only the most recent example of our continuing analysis of TLAM employment in real-world operations. TLAM saw its first combat use in 1991 in Operation Desert Storm. Since then, the Navy has fired TLAM in four subsequent operations: the strikes against Iraq in

January and June 1993; NATO's Operation Deliberate Force against targets in Bosnia-Herzegovina in 1995; and Operation Desert Strike in 1996, again in Iraq. After each of these operations, the Navy asked CNA to assess the weapon system's performance to gain insight into ways to employ TLAM better in the future.

Since Desert Storm our analysis has addressed the technical aspects of the missile system. With DIA's help, we determined that TLAM consistently has high probabilities of arriving in the target area and of damaging the target. When the observed missile performance differed from the predicted performance, we searched for possible causes, considering such factors as weapon system performance, operational planning and employment, environmental effects, and enemy attrition. Our analysis has contributed to changes in how TLAM is planned and employed.

More recently we have begun examining the command and control issues involved in TLAM strike processes—tasking, planning, and execution. Our most striking finding to date is that different commands and agencies hold disparate views on how TLAM should be controlled—differences that can adversely affect TLAM employment. When we uncovered differing views of TLAM among the various commands in the European theater, COMSIXTHFLT asked CNA to design a wargame to illuminate and resolve the differences. The game laid the foundation for those commands to establish a common set of procedures for using TLAM in support of NATO.

SEAPWR

Fifty years of experience has given the Navy great expertise in the complex art of maintaining rotationally deployed forces while meeting the unpredictable demands of crises. Because main-

taining rotationally deployed forces is so much a part of the Navy's mission, it is important to be able to assess how changes in policy, equipment, or force structure might affect it. The fleet schedulers are the ultimate authority, but they're not able to provide rapid assessments for multiple options.

Under the sponsorship of OPNAV N86 and N81, CNA developed SEAPWR—Ship Employment and Presence with Response—to assess how changes in policy, equipment, or force structure affect deployment schedules. SEAPWR uses specified policies and force levels to construct a schedule that provides the maximum possible presence. The policies can be either the existing policies regarding PERSTEMPO, deployment length, speed of advance, work-up time, etc., or an alternative set to be analyzed.

SEAPWR is more complex than previous models, which treated the fleet in aggregate without scheduling constraints. Because SEAPWR accounts for scheduling details, its results are closer to observed values based on actual fleet schedules. In addition to the level of presence residing in a given schedule, SEAPWR also computes statistics on how well a given force responds to various kinds of crises.

We're still refining the methodology; our goal is to develop a comprehensive, flexible, realistic, and accurate model—and one that is fast and easy to use. But SEAPWR has already proved its utility for several purposes: assessing the effects of force-level changes; examining the crisis-response potential of seaborne theater ballistic missile defense forces; and understanding the implications of maintaining 2.0 CVBG presence in the Persian Gulf.

Voluntary education programs

Education programs that provide sailors with opportunities to pursue both remedial and college-level courses in their off-hours are good for the Navy and good for the sailors. CNA's

recently completed analysis of voluntary education programs revealed several benefits:

- Participants in voluntary education programs are more likely to reenlist in the Navy after their initial obligation. This finding shatters the myth that educating sailors induces them to leave the Navy for more lucrative opportunities in the civilian sector.
- Participants are also more likely to be promoted, less likely to be demoted, and more likely to qualify for retraining into higher-tech ratings.
- The benefits of voluntary education exceed the costs for all the programs. The benefit-to-cost ratio is higher for more basic remedial courses than for college-level courses.
- About one-third of the enlisted force could benefit from remedial education programs.

Our analysis led to some specific actions to expand or improve education programs. At the behest of the Assistant Secretary of the Navy (Manpower and Reserve Affairs), funding was restored in POM 00 for the academic skill centers and other voluntary education programs—actions totaling \$77 million. The Chief of Navy Education and Training agreed to pursue an electronic transcript system that will facilitate counseling sailors on voluntary education courses. The Chief of Naval Personnel issued an administrative message describing the results of the study and extolling the program to the fleet. To gain support for the program among the senior enlisted ranks of the Navy, the Master Chief Petty Officer of the Navy invited us to brief the senior enlisted leadership. Finally, to demonstrate the success of voluntary education programs in the military, the Office of the Secretary of Defense sent the study to the Office of the National Partnership on Reinventing Government and the White House Special Advisor on Education.

Repatriated prisoners of war

In support of the Naval Operational Medicine Institute, CNA is developing a multi-year research agenda to explore the effects of captivity on the acute and long-term health of prisoners of war. We are using the medical data of service personnel held captive in Vietnam to analyze several issues: the physical and psychological effects of torture (more than half of the Navy personnel held in Vietnam were subjected to severe and sustained physical abuse); the effect of malnutrition on long-term health; the prevalence of chronic tropical diseases; and the effects of the POW experience on the families of those held captive.

Our research effort will coordinate the work of CNA analysts with that of epidemiologists, gerontologists, physician specialists, psychologists, and biostatisticians from academia, the military, and the Veterans Administration. To kick off the effort, in late March CNA hosted a conference on the long-term effects of captivity and torture. The conference enabled researchers to learn about the health data collected on repatriated prisoners of war and new research on the effects of captivity.

The Navy's oil-handling performance

Over the past year, the state of California has voiced strong criticism of the Navy's handling of oil. California legislators threatened to remove the Navy's public vessel exemption from the Oil Pollution Act of 1990, in part based on the claim that the Navy's oil-handling performance is significantly worse than that of the commercial sector. Concern revolves around the effect of oil spills—chronic small spills as well as larger ones—in San Diego Bay and the high costs to the state of dealing with the spills. OPNAV N45 asked CNA to investigate oil spills in San Diego Bay and to compare the Navy's record to that of the commercial sector.

We found no trend in either the number or the volume of spills over the years. The Navy's oil-

handling performance hasn't gotten worse, as some suggested, but it hasn't gotten better either. The problem for the Navy is that it engages in many more fuel transfers, thereby placing itself at greater risk of having spills. These results were briefed to COMNAVBASE San Diego and an Executive Steering Committee formed to deal with the problem. Navy leaders in San Diego have since instituted measures to reduce the risk of spills. Under a follow-up study sponsored by N45 and supported by COMNAVBASE San Diego and the ESC, CNA is assessing the effects of those measures and determining how the Navy might improve its oil handling.

Dr. Barry Howell wins Parsons Award

On 12 June the National Awards Board of the Navy League presented Dr. Barry Howell with the 1998 Rear Admiral William S. Parsons Award for Scientific and Technical Progress. Previous winners of this prestigious award include a Nobel laureate, a winner of the National Medal of Science, and many other well-known scientists. The Commander, Patrol Wing One, nominated Dr. Howell for this award for his analysis of Maritime Patrol Aircraft (MPA) antisubmarine capabilities and tactics. While assigned to PATWING One, Dr. Howell helped design an exercise series that explored the capabilities of the Extended Echo-Ranging (EER) system, and instituted a data-collection program for all real-world uses of EER. By combining data from real-world operations with that from dedicated tests and exercises, Dr. Howell was able to develop reliable tactics for using EER effectively.

DoN's RBA and RMA initiatives

The past decade has seen a gradual evolution in the way private companies conduct their business. International competition has intensified, and companies are continually looking for ways to become more competitive by improving the quality of current products, developing new products, and controlling costs. In many cases, companies have exploited improved communica-

tions and information technologies and developed new, reengineered processes for getting things done.

In recent years, the DoN started applying some of these *best business practices* to its own operations. For example, the DoN has begun outsourcing some of the supply and service functions it provides to naval forces. In the process, it has enabled some of its own offices to achieve results comparable to those of the private sector. The pressure from competition is beginning to result in more efficient, less expensive operations. The thinking behind best business practices is also being applied to the business of warfighting itself. Such concepts as *network-centric warfare* attempt to apply state-of-the-art communications and information technology to improve the way weapons are matched with targets in much the same way customers are matched with products.

These twin *revolutions* in business and military affairs—the RBA and RMA—are still in their early phases in the DoN. The DoN only recently initiated an effort to enhance and improve its functioning and efficiency. This effort includes initiatives to understand, identify, and exploit aspects of RBA and RMA and apply them to the naval services. To support these initiatives, the Under Secretary of the Navy asked CNA to support the development of a strategic business plan (SBP) for the DoN. The SBP will focus the reform initiatives already underway in the DoN. We recently completed a compilation of those initiatives; contributors were the Office of the Deputy Under Secretary of the Navy; the Deputy Direc-

tor, Programs Division, USMC; OPNAV N83; and Navy representatives to the Defense Science Board Study, Vision 21 Study, and Section 912 Report teams. The DoN SBP Executive Committee will use the compilation to refine the reform initiatives so that they reflect the focus of the SBP.

USMC organization

CNA is involved in an effort that is likely to change the way the Marine Corps is organized for the next century. The Command Element Component Headquarters Assessment addresses the growing disparity between the size of various types of headquarters and available resources. To quote the Commandant of the Marine Corps: “We cannot afford the Corps we have now or the Corps we want in the future.”

The Commandant kicked off the effort last October with a two-week conference attended by representatives from all the USMC command elements, component headquarters, and the Reserve component. CNA was involved in all aspects of the conference—from developing the conference structure to synthesizing recurring themes and unresolved issues to contributing to the conference report. Currently, we are examining non-traditional methods of organization and various matters related to alternative organizational options in the Marine Corps. The Commandant has asked us to complete our analysis in time for a force structure review he will conduct next spring, at which time he expects to decide on the force structure the Marine Corps will have at the start of the next century.